Title: METHOD OF OPTIMIZING NETWORK
CAPACITY AND FAULT TOLERANCE IN
DEADLOCK-FREE ROUTING
Inventor Name: Chiu et al.
Appl. No.
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Fig. 1

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Fig. 2

Title: METHOD OF OPTIMIZING NETWORK
CAPACITY AND FAULT TOLERANCE IN
DEADLOCK-FREE ROUTING
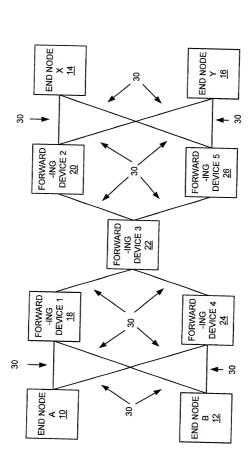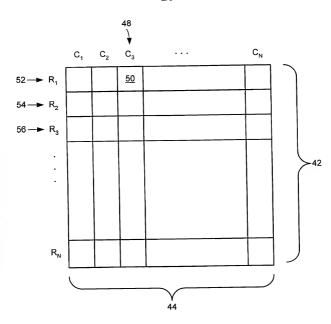Inventor Name: Chiu et al.
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OBTAIN DEADLOCK-FREE SET OF MINIMUM
COST ROUTES WITHOUT DUPLICATE LINKS,
INCLUDING ENABLED ROUTING AND
ALTERNATIVE ROUTES

<u>60</u>

INTRODUCE AND PROCESS DUPLICATE
LINKS

<u>62</u>

OPTIMIZE ENABLED ROUTING FOR
NETWORK-WIDE PERFORMANCE USING
ALTERNATIVE ROUTES

<u>64</u>

Fig. 3

Title: METHOD OF OPTIMIZING NETWORK
CAPACITY AND FAULT TOLERANCE IN
DEADLOCK-FREE ROUTING
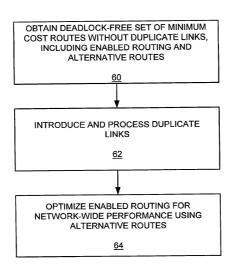Inventor Name: Chiu et al.
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Flowset Matrix F 70

Fig. 4

Title: METHOD OF OPTIMIZING NETWORK
CAPACITY AND FAULT TOLERANCE IN
DEADLOCK-FREE ROUTING
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DETERMINE FLOWSET VECTOR

100

SET FLOWSET VALUES TO ZERO FOR
FLOWS THAT DO NOT USE LINK

102

SORT FLOWSETS IN VECTOR

104

PROCESS FLOWSETS IN VECTOR BY
ASSIGNING ASSOCIATED FLOWS TO
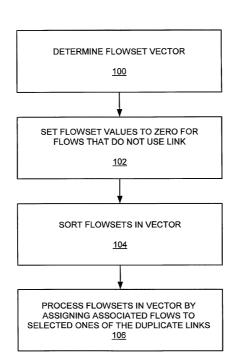SELECTED ONES OF THE DUPLICATE LINKS
106

Fig. 5

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DETERMINE FLOWSET VECTORS

110

SET FLOWSET VALUES TO ZERO FOR
FLOWS THAT DO NOT USE LINK

112

MERGE FLOWSET VECTORS

114

SORT NEW FLOWSET VECTOR

116

PROCESS NEW FLOWSET VECTOR BY
ASSIGNING ASSOCIATED FLOWS TO
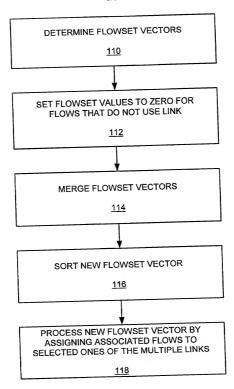SELECTED ONES OF THE MULTIPLE LINKS

118

Fig. 6

Title: METHOD OF OPTIMIZING NETWORK
CAPACITY AND FAULT TOLERANCE IN
DEADLOCK-FREE ROUTING
Inventor Name: Chiu et al.
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FORM CHOICE LIST OF ALTERNATIVE ROUTES
130

GENERATE LINK UTILIZATION ARRAY
132

GENERATE FLOWSET MATRIX
134

SELECT ALTERNATIVE ROUTE
135

SUBTRACT FLOWSET FROM OLD ROUTE
136

MODIFY ROUTING TABLE
138

ADD FLOWSET TO NEW ROUTE
140

DETERMINE LINK UTILIZATION USING ALTERNATIVE ROUTE
142

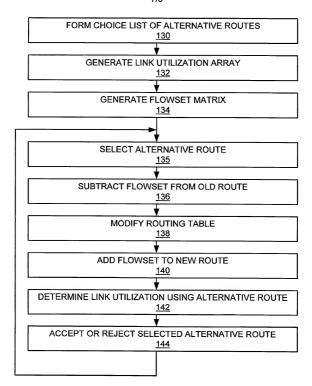ACCEPT OR REJECT SELECTED ALTERNATIVE ROUTE
144

Fig. 7

Title: METHOD OF OPTIMIZING NETWORK
CAPACITY AND FAULT TOLERANCE IN
DEADLOCK-FREE ROUTING
Inventor Name: Chiu et al.
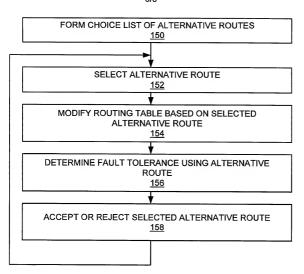Appl. No.
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FORM CHOICE LIST OF ALTERNATIVE ROUTES
150

SELECT ALTERNATIVE ROUTE
152

MODIFY ROUTING TABLE BASED ON SELECTED
ALTERNATIVE ROUTE
154

DETERMINE FAULT TOLERANCE USING ALTERNATIVE
ROUTE
156

ACCEPT OR REJECT SELECTED ALTERNATIVE ROUTE
158

Fig. 8